

Precalculus Review for Chapter 2

Name _____ Period _____

Sketch each graph without a calculator.

1. $f(x) = (x - 3)^3(x + 1)^2$

2. $f(x) = (x - 1)^2 + 6$

3. $y = -4(x + 6)(x - 3)(x - 2)(x + 4)$

4. $f(x) = (x - 2)(x + 3)$

Graph a function with the given zeros and the multiplicity.

5. Zeros are: 3 (multiplicity of 2) and -4 (multiplicity 4)

Find the x and y-intercepts, the Vertical and Horizontal asymptotes and sketch the graph.

6. $f(x) = \frac{9}{x}$

7. $g(x) = \frac{2}{x-3}$

8. $f(x) = (x + 1)(x - 5)^2$

9. $h(x) = \frac{x-2}{x-3}$

10. Write an equation for the linear function f satisfying the given conditions: $f(-1) = 3$ and $f(2) = 6$

11. Write an equation for the quadratic function whose graph contains the given vertex and point:
Vertex (3, 6), point (4, 14)

12. Find the remainder when $f(x)$ is divided by $x - k$. (Use Remainder Theorem)

$$f(x) = x^3 - 3x^2 + 6; \quad k = 2$$

13. Write a polynomial function of minimum degree with real coefficients whose zeros include those listed. Write polynomial in standard form.

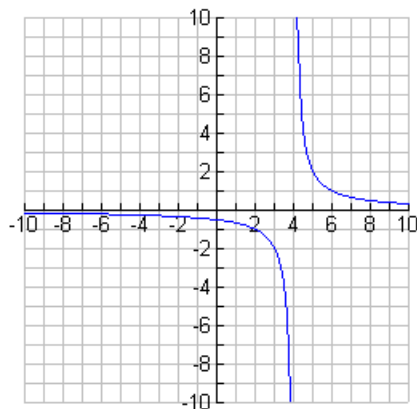
$$2, -5, 1 + i$$

For the given functions, find all the intercepts, domain, and asymptotes:

14. $g(x) = \frac{x+1}{x^2 - x - 20}$

15. $\frac{3x+2}{x^2 - x - 56}$

16. Evaluate the limit based on the graph: $\lim_{x \rightarrow 4^-} f(x) =$



Solve each equation algebraically:

17. $\frac{3}{x+3} - \frac{6}{x-3} = \frac{3}{x^2-9}$

18. $x-2 = \frac{3}{x}$

19. State how many complex and real zeros the function has:

$$f(x) = x^2 - 5x + 7$$

Using the given zero, find all other zeros of the given functions.

20. $f(x) = x^4 + 4x^2 - 45$; $x = 3i$

21. $g(x) = x^3 - 5x^2 + 12x - 18$; $x = 3$

Determine the x values that cause the polynomial function to be a) zero, b) positive, and c) negative:

22. $f(x) = (x - 7)(x + 2)(x + 1)$

Solve the polynomial inequality:

23. $(x - 2)(x + 4)(x - 1) < 0$

24. A garden plot is 12 ft. longer than it is wide. The perimeter of the garden plot is 64 feet. Find the dimensions of the garden plot.